STS | AECOM

STS
750 Corporate Woods Parkway, Vernon Hills, IL 60061
T 847.279.2500 F 847.279.2510

August 21, 2008

Mr. Steven J. Faryan
On Scene Coordinator
United States EPA, Region 5
Emergency Response Branch
77 Jackson Blvd.
Chicago, IL 60604-3590

RE: Work Plan for the Evaluation of Methane in the vicinity of temporary monitoring probe ML-6

Dear Mr. Faryan,

Pursuant to our meeting on August 7, 2008, STS, BFI Waste Systems, and the Forest Preserve District of DuPage County will further investigate the presence of methane gas in the vicinity of gas probe ML-6. STS proposes a phased approach for this work. The first phase will include an evaluation of the source of methane gas within monitoring probe ML-6 to determine the location of a possible breach in the casing or will demonstrate that the gas is not migrating through the granular layer at 48 to 53 feet where the probe is screened. The second phase will include the installation of up to three additional gas monitoring probes.

Phase I – Methane Gas Monitoring at ML-6

As discussed in our meeting, a force main that carries sanitary effluent is located approximately 30 feet west of gas monitoring probe ML-6. A gas vent for the force main is located approximately 50 feet northwest of ML-6. Summa canister samples were collected from probe ML-6 and the force main vent on July 24, 2008. Laboratory analyses of the force main gas vent indicate that the characteristics of the vent gas are very similar to ML-6 gas. Furthermore, the vast majority of the VOC constituent concentrations occur at greater levels in the sanitary sewer vent than at ML-6. Finally, the water level within ML-6 is above the top of the screen interval, limiting the capacity for soil gas to migrate into the probe through the screened zone. Based on this information, STS believes gas expelled from the force main vent is migrating through shallow soil and entering ML-6 through the vadose zone casing (i.e., through a crack or through the joints).

STS proposes to monitor the gas as a function of depth within probe ML-6 by progressively moving a single packer with sampling port down the probe at 15-foot intervals (successively reducing the portion of the casing being sampled). The packers will either be inflatable or rigid mechanical and will create an air tight seal within the casing. Narrow tubing or conduit will be extended through the packer to the ground surface to provide sampling access. The air from the isolated portions of the casing will be analyzed for methane, carbon dioxide, oxygen and balance gas composition utilizing a Landtec GEM 500 multiple gas analyzer. The first gas sample will be taken between ground surface and 15 feet below ground surface. The packer assembly will then be switched so that the zone from 15 and the water table can be sampled (the water table is at approximate 40 ft below ground surface). Finally, the packer assembly and probe will be lowered to a depth of approximately 30 ft, allowing the zone between 30 ft and the water table to be monitored.

The results will be used to determine which portion of the ML-6 casing is breached and for comparison to gas data collected at the force main vent. Both the concentration data and the relative flow rate will be utilized to identify the portion of the casing which is likely to be leaking. This information will be utilized to determine the depth of installation for a shallow nested probe (referred to as ML-6S). The probe will be installed to demonstrate that the source of the gas is a local shallow source (i.e., adjacent force main and vent) rather than the deeper portion where the probe was screened.

Phase II – Gas Probe Installation

Two additional temporary gas monitoring probes will be installed between the landfill and probe ML-6 in order to demonstrate that gas is not migrating between the existing monitoring network probes and somehow being masked by the gas emitted by the sewer vent as suggested by Weston Solutions. STS proposes that a third shallow monitoring probe be installed within 10 feet of force main between the force main and ML-6. It is anticipated that the shallow probe will be installed at a depth similar to the force main piping (i.e. within approximately 15 feet of ground surface) and screened within the same soil unit. However, the depth of the probe may be adjusted based on the results of the Phase 1 monitoring program. The probe will be constructed of 1 inch diameter schedule 40 PVC and a 10 foot 0.010 slot screen interval. It is anticipated that STS will utilize this temporary probe to evaluate the major gas constituent composition of shallow soil near the force main to determine the extent of gas migration from the force main piping (methane, carbon dioxide, oxygen, hydrogen sulfide and balance gas).

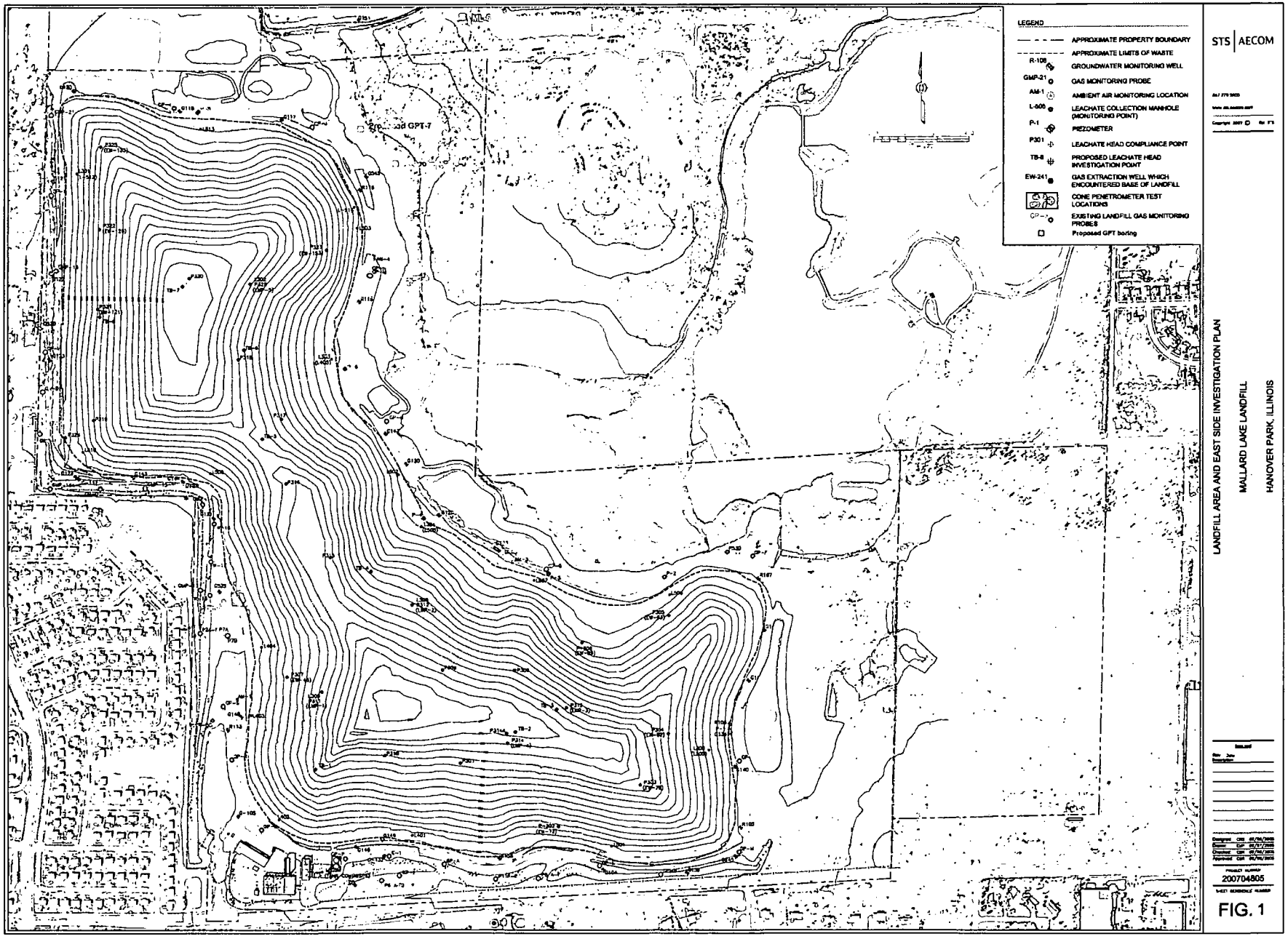
The two additional temporary monitoring locations between ML-6 and the Mallard Lake Landfill (refer to Figure 1) will be used to provide additional data to indicate whether or not a potential pathway for landfill gas exists from the landfill to ML-6. STS proposes that each probe be installed using a truck or track mounted geoprobe (direct push) rig. The probe will be advanced to a depth of between 10 and 30 feet below grade. The depth will be determined based on the soil stratigraphy and groundwater elevation. The temporary gas probes will be installed using 1-inch diameter schedule 40 PVC and up to a 15-foot 0.010 slot screen interval. However, due to the gravelly deposits encountered during the completion of temporary probes GPT-4, GPT-5 and GPT-6 it may be necessary to install the additional temporary probes if thick unsaturated granular soils are encountered. Conversely, the probes may be terminated at relatively shallower depths if all granular zones are unsaturated. The proposed monitoring locations will be equipped with surface seals and protective casings similar to those used on other temporary monitoring probes within the investigation area.

Please do not hesitate to call if you have any questions or comments regarding this work plan.

Sincerely,

Craig S. Rawlinson, P.G.
Associate Hydrogeologist

cc: Joseph Benedict, Forest Preserve District of DuPage County
Jim Hitzeroth, Eric Ballanger, Mallard Lake Landfill


LEGEND
APPROXIMATE PROPERTY BOUNDARY
APPROXIMATE LIMITS OF WASTE
R-108 GROUNDWATER MONITORING WELL
GMP-21 GAS MONITORING PROBE
AM-1 AMBIENT AIR MONITORING LOCATION
L-606 LEACHATE COLLECTION MANHOLE (MONITORING POINT)
P-1 PIEZOMETER
P301 LEACHATE HEAD COMPLIANCE POINT
TB-8 PROPOSED LEACHATE HEAD INVESTIGATION POINT
EW-241 GAS EXTRACTION WELL WHICH ENCOUNTERED BASE OF LANDFILL
CONE PENETROMETER TEST LOCATIONS
GP-7 EXISTING LANDFILL GAS MONITORING PROBES
Proposed GPT boring
GPT-7
STS | AECOM
LANDFILL AREA AND EAST SIDE INVESTIGATION PLAN
MALLARD LAKE LANDFILL
HANOVER PARK, ILLINOIS
200704805
FIG. 1